

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (original) A method for the *in vitro* micropropagation and phytofortification of a phytopharmaceutical plant comprising:
  - a) culturing a sterile explant of said phytopharmaceutical plant on an induction medium comprising at least one plant growth regulator having cytokinin activity, to form regenerated tissue;
  - b) transferring said regenerated tissue to a basal medium and culturing to form plantlets; and
  - c) subculturing said plantlets onto a basal medium containing at least one additive of interest, to allow uptake and accumulation of said at least one additive of interest in a bio-available form in said plantlet.
2. (currently amended) The method of claim 1, wherein after said step of culturing (step a)), and prior to said step of transferring (step e b)), said regenerated tissue is placed on a basal medium and subcultured to allow ~~optimized~~ further formation of regenerated tissue ; ~~and~~ ,
3. (original) The method of claim 1 wherein after said step of transferring (step b)), said plantlet is transferred to a hydroponic environment with a recycling solution containing at least one additive of interest to allow uptake and accumulation of said at least one additive of interest in a bioavailable form within said plantlet or seedling.
4. (currently amended) The method according to any one of claim 1, 2 or 3, wherein in said ~~culturing~~ sub-culturing step, said at least one additive of interest is selected from boron, calcium, chloride, chromium, cobalt, copper, iron, lithium, iodine, magnesium, manganese, molybdenum, nickel, phosphorous, potassium, selenium, silicon, sodium, sulphur, tin, vanadium and zinc.
5. (previously presented) The method according to claim 1, wherein said phytopharmaceutical plant is selected from the group consisting of:
  - Achillea millefolium
  - Achyranthes bidentata

Aconitum napellus  
Adonis aestivalis  
Agastache mexicana  
Agrimonia eupatoria  
Agathosma betulina  
Allium sp  
Anchusa officinalis  
Anemopsis californica  
Angelica dahurica  
Angelica polymorpha sinensis (A. sinensis)  
Arnica Montana  
Ammi visnaga  
Arctostaphylos uva-ursi  
Asclepias tuberosa  
Astragalus membranaceus  
Astragalus chinensis  
Baphicacanthus cusia  
Bixa orellana  
Bupleurum falcatum  
Brugmansia (Datura) spp.  
Campanula rapunculus  
Carum roxburgianum  
Carum copticum  
Cassia tora  
Chamaelirium luteum  
Chimaphila umbellata  
Commiphora africana  
Conium maculatum  
Crithium maritimum  
Datura metel (Datura alba)  
Datura inoxiaDracocephalum moldavica  
Echinacea sp.  
Eclipta alba (E. prostrata)  
Ephedra nevadensis  
Eriodictyon californicum  
Eucommia ulmoides

Eupatorium perfoliatum  
Filipendula vulgaris (F. hexapetala)  
Gaultheria procumbens  
Geum urbanum  
Houttuynia cordata  
Hydrocotyle asiatica (Centella asiatica)  
Hypericum perforatum cv. Anthos  
Inula helenium  
Jatropha curcas  
Leptospermum scoparium  
Lespedeza capitata  
Ligusticum porteri  
Ligustrum lucidum  
Lithospermum officinale  
Lycium barbarum  
Mucuna pruriens  
Mandragora officinarum  
Origanum dictamnus  
Parietaria judaica (P. officinalis)  
Phyllanthus emblica  
Picrasma excelsa  
Piniella ternate  
Pogostemon patchouli  
Polygonum multiflorum  
Porophyllum ruderale ssp. macrocephalum  
Prunella vulgaris  
Pueraria lobata (P. thunbergiana)  
Rauvolfia serpentina  
Rivea corymbosa  
Sanguinaria Canadensis  
Satureja douglasii  
Schizonepeta tenuifolia  
Scutellaria baicalensis  
Solanum xanthocarpum (S. surattense)  
Sutherlandia frutescens  
Tabebuia impetiginosa

Tanacetum parthenium  
Tribulus terrestris  
Trichosanthes kirilowii  
Turnera diffusa  
Voacanga africana, and  
Withania somnifera

6. (original) The method according to claim 5, wherein said phytopharmaceutical plant is selected from St. John's wort (*Hypericum perforatum* cv. Anthos), Huang-qin (*Scutellaria baicalensis*), *Echinacea* sp. and feverfew (*Tanacetum parthenium*).
7. (currently amended) The method according to claim 1, wherein said at one plant growth regulator having cytokinin activity is selected from the group consisting of thidiazuron (TDZ, *N*-phenyl-*N'*-(1,2,3-thiadiazol-yl)urea), benzylaminopurine(BAP), zeatin, CPPU (*N*-(2-chloro-4pyridyl)-*N*-(phenyl urea) and 2-*I*-P (N6-(2-isopentenyl) adenine ~~or 6-gamma, gamma-dimethylallylamino purine~~).
8. (original) The method according to claim 7, wherein said at least one plant growth regulator having cytokinin activity is selected from thidiazuron (TDZ) and benzylaminopurine (BAP).
9. (currently amended) The method according to claim 8, wherein said induction medium comprises from about 0.001 to about 25  $\mu\text{mol} \cdot \text{L}^{-1}$  of said at least one plant growth regulator having cytokinin activity.
10. (original) The method according to claim 8, wherein said sterile explant is maintained on said induction medium from about 1 to about 50 days.
11. (previously presented) The method according to claim 1, wherein said explant is selected from the seed, petiole, hypocotyl, stem, cotyledon and leaf.
12. (previously presented) The method according to claim 1, wherein said phytopharmaceutical plant is St. John's wort.

13. (original) The method according to claim 12, wherein said plant growth regulator having cytokinin activity is thidiazuron.
14. (original) The method according to claim 13, wherein the induction medium comprises thidiazuron from about 0.001 to about  $25 \mu\text{mol} \cdot \text{L}^{-1}$ .
15. (original) The method according to claim 14, wherein the induction medium comprises thidiazuron from about 4 to about  $10 \mu\text{mol} \cdot \text{L}^{-1}$ .
16. (original) The method according to claim 12, wherein said sterile explant is maintained on said induction medium from about 1 to about 15 days.
17. (original) The method according to claim 16, wherein said sterile explant is maintained on said induction medium from about 8 to about 10 days.
18. (original) The method according to claim 12, wherein said explant is etiolated hypocotyl.
19. (previously presented) The method according to claim 1, wherein the phytopharmaceutical plant is *Echinacea sp.*.
20. (original) The method according to claim 19, wherein said plant growth regulator having cytokinin activity is selected from the group consisting of thidiazuron and benzylaminopurine.
21. (original) The method according to claim 20, wherein said induction medium comprises from about 0.001 to about  $25 \mu\text{mol} \cdot \text{L}^{-1}$  of said plant growth regulator having cytokinin activity.
22. (original) The method according to claim 20, wherein said plant growth regulator having cytokinin activity is from about 1.0 to about  $15 \mu\text{mol} \cdot \text{L}^{-1}$ .
23. (original) The method according to claim 19, wherein said sterile explant is maintained on said induction medium from about 1 to about 50 days.
24. (original) The method according to claim 23, wherein said sterile explant is maintained on said induction medium from about 10 to about 35 days.
25. (original) The method according to claim 19, wherein said explant is petiole.

26. (previously presented) The method according to claim 1, wherein said phytopharmaceutical plant is Huang qin.
27. (original) The method according to claim 26, wherein said plant growth regulator having cytokinin activity is thidiazuron.
28. (original) The method according to claim 27, wherein said induction medium comprises from about 0.001 to about 25  $\mu\text{mol}\cdot\text{L}^{-1}$  of said plant growth regulator having cytokinin activity.
29. (original) The method according to claim 28, wherein said plant growth regulator having cytokinin activity is from about 1.5 to about 20  $\mu\text{mol}\cdot\text{L}^{-1}$
30. (original) The method according to claim 26, wherein said sterile explant is maintained on said induction medium from about 1 to about 30 days.
31. (original) The method according to claim 30, wherein said sterile explant is maintained on said induction medium from about 14 to about 20 days.
32. (original) The method according to claim 26, wherein said explant is selected from seeds, hypocotyl and stems.
33. (previously presented) The method according to claim 1, wherein the phytopharmaceutical plant is feverfew.
34. (original) The method according to claim 33 wherein said plant growth regulator having cytokinin activity is thidiazuron.
35. (original) The method according to claim 34, wherein said induction medium comprises from about 0.001 to about 25  $\mu\text{mol}\cdot\text{L}^{-1}$  of said plant growth regulator having cytokinin activity.
36. (original) The method according to claim 35, wherein said plant growth regulator having cytokinin activity is from about 2.0 to about 8.0  $\mu\text{mol}\cdot\text{L}^{-1}$
37. (original) The method according to claim 33, wherein said sterile explant is maintained on said induction medium from about 1 to about 50 days.

38. (original) The method according to claim 37, wherein said sterile explant is maintained on said induction medium from about 20 to about 35 days.
39. (original) The method according to claim 33, wherein the explant is selected from leaf, stem, petiole and hypocotyl.
40. (original) The method according to claim 4, wherein said at least one additive of interest is zinc.
41. (original) A method according to claim 4, wherein said at least one additive of interest is lithium.
42. (original) The method according to claim 4, wherein said at least one additive of interest within said basal medium, is from about 0.001 to about 500 mg•L<sup>-1</sup>.
43. (previously presented) The method according to claim 2, wherein, in said transferring step, said regenerated tissue is subcultured for about 1 to about 15 days.
44. (previously presented) A method for phytofortification of an *in vitro*-grown phytopharmaceutical plant comprising:
- a) culturing a sterile seedling, explant or regenerated tissues to form a plantlet; and
  - b) subculturing said plantlet onto a basal medium containing at least one additive of interest, to allow uptake and accumulation of said at least one additive of interest in a bio-available form in said plantlet.
45. (previously presented) The method according to claim 44, wherein, in said step of culturing, said plantlets are produced either:
- a) on a sterile explant of said phytopharmaceutical plant grown on an induction medium comprising at least one plant growth regulator having cytokinin activity, or
  - b) grown from a sterile seed, or
  - c) seedling in culture.
46. (currently amended) The method according to claim 45, wherein said at one plant growth regulator having cytokinin activity is selected from the group consisting of thidiazuron (TDZ, *N*-phenyl-*N'*-(1,2,3-thidiazol-yl)urea), benzylaminopurine (BAP), zeatin, CPPU (N-(2-chloro-

4pyridyl)-N(-phenyl urea) and 2-*i*-P (N6-(2-isopentenyl) adenine or 6-~~gamma,gamma~~-~~dimethylallylamino purine~~).

47. (previously presented) A phytopharmaceutical plant prepared by the method of claim 1 and comprising an elevated level of said additive of interest when compared to a plant grown in the absence of said additive of interest.

48. (previously presented) A method for the *in vitro* micropropagation involving *de novo* shoot formation of non-meristematic tissue of a phytopharmaceutical plant comprising:

- a) culturing a sterile explant of said phytopharmaceutical plant on an induction medium comprising one or more plant growth regulators having cytokinin activity, to form regenerated tissue; and
- b) transferring said regenerated tissue to a basal medium and culturing to form plantlets.